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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/651,048

08/29/2003

Pradeep K. Govil

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08/26/2004

STERNE, KESSLER, GOLDSTEIN & FOX PLLC  
1100 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER

DINH, JACK

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/651,048	<b>Applicant(s)</b> GOVIL ET AL.	
	<b>Examiner</b> Jack Dinh	<b>Art Unit</b> 2873	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 12-26 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. <u>0804</u> .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____.  | 6) <input checked="" type="checkbox"/> Other: <u>DETAILED ACTION</u> .      |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-11 and 27, drawn to a spatial light modulator, classified in class 359, subclass 291.
  - II. Claims 12-20, drawn to a method of forming a spatial light modulator, classified in class 216, subclass 23.
  - III. Claims 21-26 and 28, drawn to a method of using a spatial light modulator, classified in class 345, subclass 84.

The inventions are distinct, each from the other because of the following reasons:

(a) Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the electrodes can be formed at a different position other than the end of the plurality of piezoelectric elements.

(b) Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that

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product (MPEP § 806.05(h)). In the instant case, the product can be used without forming a wavefront based on the light interacting with the mirrors.

(c) Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

(d) During a telephone conversation with Jason D. Eisenberg on 08/18/04 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-11 and 27. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-26 and 28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

(e) Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

2. Claims 2 and 3 are objected to because of the following informalities. The phrase “reflective elements” is inconsistent with the “reflective devices” used in claim 1 and other dependent claims. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. 102(b) as being unpatentable by Takeuchi et al. (US Patent 6,249,370).

(a) Regarding claim 1, Takeuchi et al. (figure 20) is interpreted as disclosing a micro-optoelectro-mechanical system integrated circuit spatial light modulator comprising an array of reflective devices **50**, an integrated circuit actuator coupled to a substrate, the integrated circuit actuator having an array of actuator elements **32**, and first **34b** and second **34a** arrays of electrodes coupled to opposite walls of the actuator elements.

(b) Regarding claim 2, Takeuchi et al. (figure 20) is interpreted as further disclosing that the actuator elements and electrodes are configured to move the reflective element in two directions (see figure).

(c) Regarding claim 9, Takeuchi et al. (figure 20) is interpreted as further disclosing that the first array of electrodes is coupled between a first end of the actuator elements and the reflective devices, and the second array of electrodes is coupled between a second end of the actuator elements and a substrate **22**.

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(d) Regarding claim 10, Takeuchi et al. (figure 20) is interpreted as further disclosing that the actuator elements are configured such that the reflective devices form an overall curved shape (see figure).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-5, 7, 8, 11 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US Patent 6,249,370), as applied in claim 1, in view of Makino et al. (US Patent 6,549,694).

(a) Regarding claims 3 and 27, Takeuchi et al. is interpreted as disclosing all the limitations, as described above, except that the actuator elements and electrodes are configured to move the reflective elements in four directions. Within the same field of endeavor, Makino et al. is interpreted as disclosing that reflective elements move in four directions are well known, such as tilting (left and right) as shown in figure 5 or moving vertically (up and down) as shown in figures 6A and 6B. Therefore, it would have been obvious to one having ordinary skill in the art at the time that the invention was made to provide reflective elements move in four directions, as taught by Makino et al., for the purpose of increasing the reflective elements' functionality.

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(b) Regarding claims 4 and 5, Makino et al. (figure 5) is interpreted as further disclosing that each of the second array of electrodes comprises first and second electrode sections **107a** and **107b** configured to allow the actuator elements to tilt the reflective devices.

(c) Regarding claim 7, Makino et al. (figure 6B) is interpreted as further disclosing that adjacent ones of the actuator elements have different heights (see figure).

(d) Regarding claim 8, Makino et al. (figure 5) is interpreted as further disclosing that the actuator elements moves the reflecting device about one-quarter of a wavelength of light in each direction (col. 2, lines 47-54).

(e) Regarding claim 11, Makino et al. (figure 5) is interpreted as further that the actuator elements **108** are formed in varying heights and positions on the substrate, such that varying wavefront patterns are generated by light reflecting therefrom.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US Patent 6,249,370), as applied in claim 1, in view of Amm et al. (US Patent 6,639,722).

Regarding claim 6, Takeuchi et al. is interpreted as disclosing all the limitations, as described above, except for a first coupling device and a second coupling device. Within the same field of endeavor, Amm et al. (figure 3A and 3B) is interpreted as disclosing a teaching of a configuration wherein the actuator elements can be controlled

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in groups. Although the drawing does not explicitly shows the coupling features, the teaching would strongly suggest that such coupling features would have been obvious modifications to one of ordinary skill from the spatial light modulator of Takeuchi et al. Therefore, it would have been obvious to one having ordinary skill in the art at the time that the invention was made to a first and a second coupling device, as suggested by Amm et al., for the purpose of controlling the adjacent actuator elements in groups.

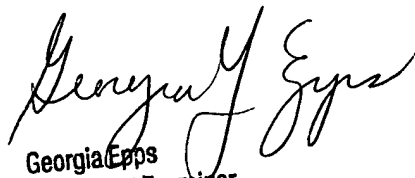
***Other Information/Remarks***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Dinh whose telephone number is 571-272-2327. The examiner can normally be reached on M-F (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jack Dinh

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800